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Virtual Reality in Health, Communication and Education.

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Abstract: VR (Virtual Reality)is a technique that used to connect human's simulation with realistic experience. Virtual Reality is a key that combines our thoughts with reality. It is the user's customized reality so that user can create its own world.
VR system use our sense organs to transmission of simulated environment that leads humans to feel, touch and experience their dream using head mounted display ,sensors and sound. VR not only used in gaming industry, even in studying or training purpose for army or for astronauts. Virtual Reality's range is not in a house for playing, it can go up to another level of future using simulation. Experience from house to another planet can be done with the help of VR.
Index Terms: Evolution of VR, Virtual Reality, AG(Augmented reality).

I. INTRODUCTION

Virtual Reality (VR) is used to create stimulated environment that is fake environment using computer technology. It is not only watching technique, it includes sound and sensations too. Using stimulated machines, we can experience the 3D word. VR is the gateway which effects our senses and we feel, touch, hear, see and even smell the artificial world. We can also call this 'near-real' world. Now a day, Virtual Reality (VR) technology is also applied to advance fields such as medical, designing, training, education, entertainment and in health. It is a simulated interface which connects imaginary world with real world that too in 3D (Three Dimensioned) vision. While working with 2D, it can easily helps in better understanding, thus 3D helps in much more clarification with examples and study in thesis about physics and chemistry or in field of medicine. VR initially used with monitored screens or though special stereoscopic display visual experiences. It may also include auditory, sensors, sound through speaker and using headphones. The users or the person using VR may also control simulation using keyboard or joy stick or mouse or wired gloves.

A. Hardware and History of VR:

1) *The History of VR (Virtual Reality):* It is a word or term that is defined when simulation is combined with technology in a particular environment to copy the real world or in other words to make a copy of the real world. Many of the VR events occur to create a different experience to attract more audience. Now a day , VR not only used for entertainment , even it is used in other fields of technology i.e. science , medical, training purpose for military as well as for pilots and astronauts. In beginning of VR , it was used in gaming world into monitors, was a concept only originated from imagination . When we are talking about history of virtual history , we should also consider all the graphics of computer which connected to simulate the real world. Virtual Reality becomes popular during the 1990's. It was one of the best topic for movies and in games or in education or medical or health field. During the 1950's, a cinematography named Morton Heilig attempt to stimulate the different ideas senses become idea for what we know , today known as Virtual Reality. This was the same person who use sensors with moving chairs and odor meters along with providing visual treat for the audience



Many people think that VR was a new concept when actually it is not . In reality, it was originated by the vision of Douglas Englbart . In beginning , the first step towards the VR that is to connect the computer with the screen or in a screen. When screen

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was used to visualize the information ,it was the first time when we connect with virtualization. Before 1950, computer was a bulky or huge machinery which was used by the military only. The computers was powerful machines that could help in take out a town's power supply. Well in 1961, a company decide to attach a headset called headsight. A company named Phico Cooperation made a project to produce visualization with simulation together with a tracking system., which was also used by military purposes. For example, pilots can use VR for their training purpose to flight in extreme darkness and in extreme tough situation without putting themselves in actual. In 1965, a person named Ivan Sutherland tried to copy the real world with the help of this invention , by naming it Ultimate Display. This invention was like a world in itself. According to his vision, this invention focus more on 3D objects .



In 1980 's to 1990's ,VR became a concept which they used to call future .with the improvement of computer graphics in video games for that period of time,it was categorised like play station. Today , sony, ps4, XboxONE are working on cuttng edge graphics to copy the real world.

B. Applications of VR in Different Fields

1) *Virtual Reality in the Military:* Military adopted this technology for all i.e. army, navy, and air force for training purpose initially. This was very useful for for the soldiers in their training so that they know to handle particular situations or extreme dangerous situations and thus can learn how to react and handle that situations in appropriate manner. VR enables the military to give proper training without putting them in actual danger for their life or risk of serious injury. for example, to give proper training by putting soldiers in VR and give them a atmosphere of war in which they are in front of their enemies without putting them in danger. It has also proven safer and more effective way to train.



C. Military uses of Virtual Reality

1) These include:
2) Flight simulation
3) Battlefield simulation
4) Medic training (battlefield)
5) Vehicle simulation

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6) Virtual boot camp

D. Virtual Reality in Engineering

VR engineering includes uses the 3D modeling tools and visualization technologies for the purpose of designing , which helps the engineers to view their projects or practical in 3D for better understanding to teach how they actual world in real world. This helps in reduce of risk factor and the potential risk as well before practical implementation. VR also allow the designers to keen observe their projects within a safer environment so that they may make changes where necessary, which help in saving both time and money. The important ability of VR is to depict fine grained details of engineering products to well maintain the illusion, which means high phase of graphics , sound , video with realistic sound and sensors along with movements.

E. Virtual Reality and Education

Now a day, education system has adopted the Virtual Reality for learning and teaching . The plus point for using VR in education that it enables group of students to interact with each other along themselves in 3D environment. It helps to simplify the data or the studies in the form of fun and easy to memorize . In addition with fun , it helps the student to invent more and discover more when they are explained eith different prospective.

1) *Virtual reality astronomy;* for instance , astronomy students learn more about our galaxy and our solar system, that how days occurs and weather changes ,formation of stars and their meanings, meteor and meteoroids, comets etc. these all thesis become more easy and attractive for students to learn and discover more. Another example , it may also help the students who have particular or different method of understanding using 3D simulation , using symbols , colors. for medical students , VR also help in different way as the VR help them to understand the surgery and their sensitivity before working on the real patient.

F. Virtual Reality in Telecommunications

As growing fields of VR, it is also used in telecommunication for particular mobile communications that helps in 3D communication using particular VR based headset and sensors. As the growing of technology, cost is a factor that affect the VR. As video conferencing , skype are much more cheaper as well as flexible than the VR. Surgery simulation and telemedicine can be used to help VR using telecommunication. For example, surgeries can be done using remotes and further then by robots with the use of Virtual Reality.

G. Virtual Reality in Healthcare

Healthcare is one of the biggest adopters of virtual reality which encompasses surgery simulation, phobia treatment, robotic surgery and skills training in medical. VR often used as a diagnostic tool which helps the doctors to enables diagnosis in place along with other medical methods i.e. MRI scans etc. BAnother use in healthcare is robotic surgery , which means surgery id done with the help of robots for training purpose for fresher doctors. There is one more thing, called telesurgery which is performed by the doctor or surgeon where patient is at some other place.



H. Advantages of virtual reality in medicine

1) Virtual reality in dentistry
2) Virtual reality in medicine
3) Virtual reality in surgery
4) Surgery simulation
5) Virtual reality therapies
6) Virtual reality in phobia treatment

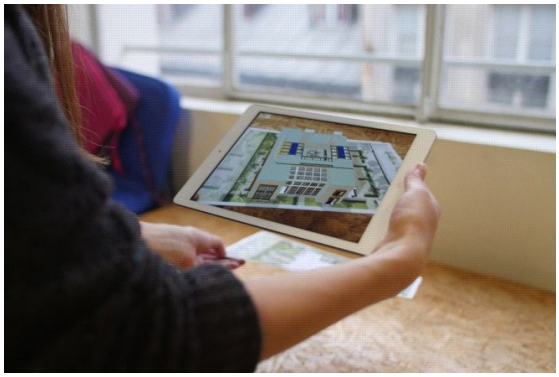
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7) Virtual reality for the disabled

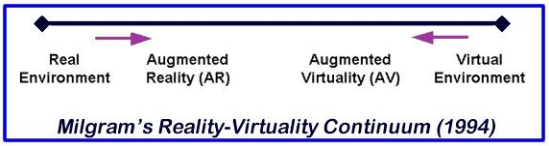
I. Virtual Reality & Augmented Reality

AR is a technology that put layers on one another to make it more enhanced with meaningful to interact though its ability of understanding . AR used in mobiles and tablets , so that putting layers on one another can make them enhance and easily they get separated . AR(Augmented Reality) is widely used to display scores of match or any sports game on the score board using AR. AR is also used to make affective presentation of graphs and holograms to attract clients and more deals .



J. Augmented Reality vs. Virtual Reality

Augmented reality and virtual reality are inverse reflections of one in another with what each technology seeks to accomplish and deliver for the user. Virtual reality offers a digital recreation of a real life setting, while augmented reality delivers virtual elements as an overlay to the real world.



K. Advantages of Virtual Reality

Virtual reality creates a realistic world . It enables user to explore places. Through Virtual Reality user can experiment with an artificial environment. Virtual Reality make the education more easily and comfort. VR helps in medical field for better work .It helps in better understanding.

L. Disadvantages of Virtual Reality

1) Sometimes it get more complex.
2) It is costly
3) Somehow finding it easy , user may get confused
It is a world in its own

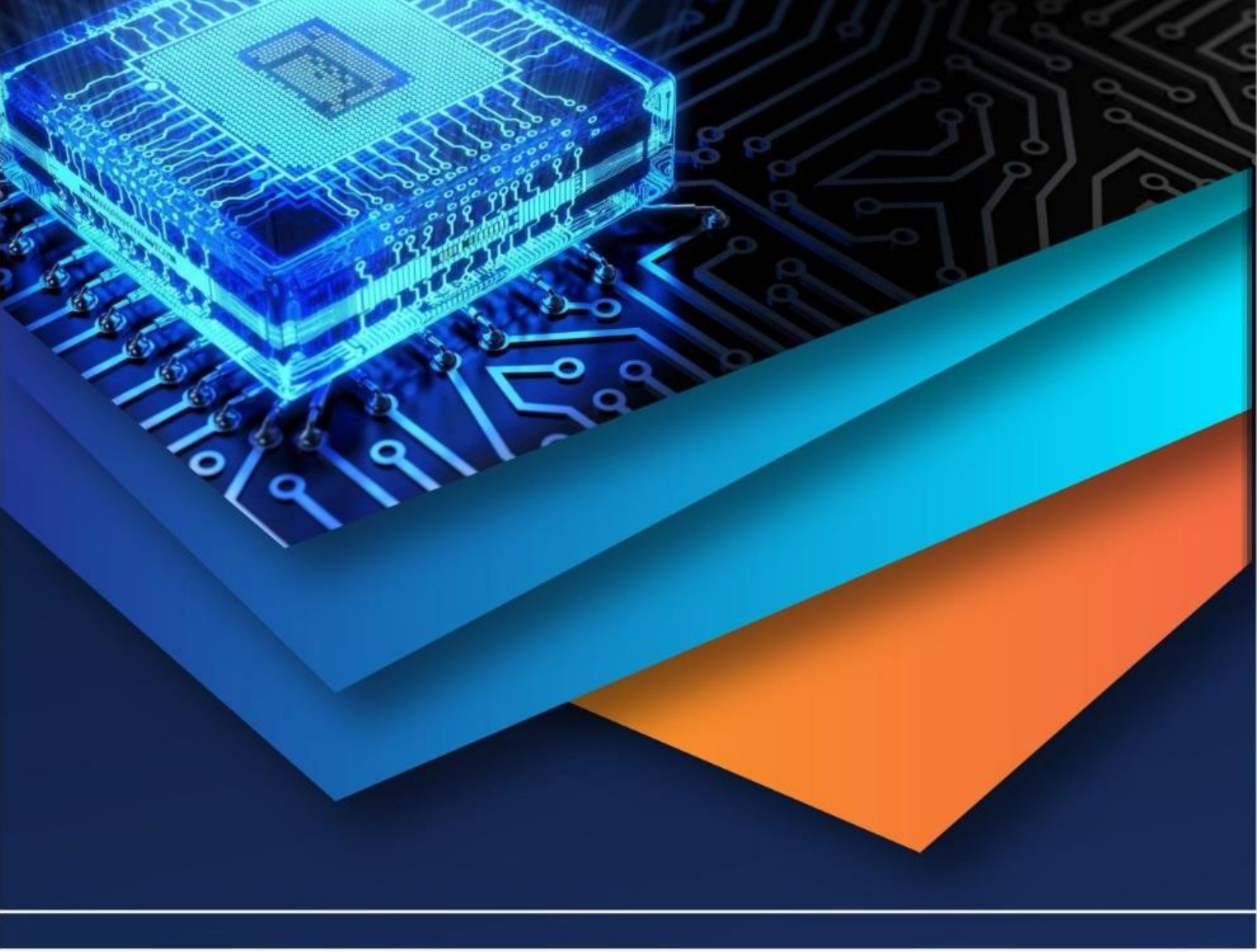
II. CONCLUSION

VR is now used everywhere in almost every field. In this , we define what is VR , how it is generated , its advantages and disadvantages, AR and VR . We can easily et connected to the people which are far away from us with the help of this technology only. With the help of this , distance doesn't matter now. There are many more applications which are developed using VR only not only in field of entertainment but also in other fields as well.

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